

AMENDMENTS TO THE CLAIMS

Please cancel Claims 11-13 and 16-18; amend Claim 9; and add new Claims 19-25 as follows.

LISTING OF CLAIMS

1.-8. (cancelled)

9. (currently amended) An apparatus for forming an insert molding, comprising:

a die set having a cavity;

means for controlling a temperature of the die set;

a hold member movably provided on the die set for holding an insert in the cavity;

means for injecting molten resin into the cavity when the insert is held by the hold member;

means for separating the hold member from the insert at a given timing; and

means for heating a surface of the hold member to a temperature higher than a temperature of an inner surface of the die set, the hold-member surface contacting the molten resin, the die-set inner surface being exposed in the cavity, the heating means being activated simultaneous with or after the injecting means injects the molten resin into the cavity[.]; wherein

the hold member comprises a heat feeding portion and a first body covering the heat feeding portion;

the heat feeding portion comprising a heating member which generates heat when being supplied with an electric current;

the hold member comprises a heat generating member and a second body, the heat generating member being made of an electrically-conductive ceramic, the second body surrounding the heat generating member, the second body being made of an insulating ceramic;

the temperature of the hold member is equal to or lower than the thermal deformation point of the material of the insert while the hold member holds the insert;
and

the temperature of the hold member is equal to or higher than the melting point of the resin and is equal to or lower than the thermal deterioration point of the resin when the hold member is moved.

10.-13. (cancelled)

14. (original) An apparatus as recited in claim 9, wherein an inner surface of the die set comprises means for facilitating cooling of a first region of the molten resin in the cavity relative to cooling of a second region of the molten resin in the cavity, the die-set inner surface being exposed in the cavity, the second region adjoining the hold member, the first region being more distant from the hold member than the first region is.

15. (original) An apparatus as recited in claim 14, wherein the first region is thinner than the second region.

16.-18. (cancelled)

19. (new) An apparatus for forming an insert molding, comprising:
a die set having a cavity;
means for controlling a temperature of the die set;
a hold member movably provided on the die set for holding an insert in the cavity;
means for injecting molten resin into the cavity when the insert is held by the hold member;
means for separating the hold member from the insert at a given timing;
means for heating a surface of the hold member to a temperature higher than a temperature of an inner surface of the die set, the surface of the hold member and contacting the molten resin, the die-set inner surface being exposed in the cavity;
and
a controller for activating the heating means simultaneous with or after the injection means injects the molten resin in to the cavity.

20. (new) An apparatus as recited in claim 19, wherein the hold member comprises a heat feeding portion and a body covering the heat feeding portion.

21. (new) An apparatus as recited in claim 20, wherein the heat feeding portion comprising a heating member which generates heat when being supplied with an electric current.

22. (new) An apparatus as recited in claim 19, wherein the hold member comprises a heat generating member and a body, the heat generating member being made of an electrically-conductive ceramic, the body surrounding the heat generating member, the body being made of an insulating ceramic.

23. (new) An apparatus as recited in claim 19, wherein an inner surface of the die set comprises means for facilitating cooling of a first region of the molten resin in the cavity relative to cooling of a second region of the molten resin in the cavity, the die-set inner surface being exposed in the cavity, the second region adjoining the hold member, the first region being more distant from the hold member than the first region is.

24. (new) An apparatus as recited in claim 23, wherein the first region is thinner than the second region.

25. (new) An apparatus as recited in claim 19, wherein the heating means comprises means for heating the hold member to a temperature equal to or higher than a melting point of the injected resin.

REMARKS

Claims 9, 14, 15 and 19-25 remain pending in the present application. Claims 11-13 and 16-18 have been cancelled. Claim 9 has been amended. Claims 19-25 are new. Basis for the amendments and new claims can be found throughout the specification, claims and drawings originally filed.

REJECTION UNDER 35 U.S.C. § 102

Claims 9, 11, 12 and 14-18 are rejected under 35 U.S.C. § 102(b) as being anticipated by Sharp (UK 1,382,583). Claim 9 has been amended to include the limitations of Claims 11, 12 and 13 and to include the limitations regarding the specific temperature control of the holding member. The specific temperature control limitations are supported by Figure 20 and the specification beginning on page 19, line 26 and ending on page 21, line 7 of the application.

Sharp discloses a heater for the holding member but Sharp does not disclose, teach or suggest the specific temperature control limits now defined in amended Claim 9.

Thus, Applicants believe Claim 9, as amended, patentably distinguishes over the art of record. Likewise, Claims 14 and 15, which ultimately depend from Claim 9, are also believed to patentably distinguish over the art of record. Claims 11 and 12 have been cancelled with their limitations being added to Claim 9. Claims 16-18 have been cancelled. Reconsideration of the rejection is respectfully requested.

REJECTION UNDER 35 U.S.C. § 103

Claim 13 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Sharp taken together with Westover (U.S. Pat. No. 5,004,893: column 2, lines 50-68 and column 7, lines 40-59). Claim 13 has been cancelled and its limitations have been added to Claim 9 which is now believed to be allowable. Reconsideration of the rejection is respectfully requested.

NEW CLAIMS

New Claims 19-25 are the same as previously pending Claims 9 and 11-16 except that the limitation stating "the heating means being actuated simultaneous with or after the injecting means injects the molten resin into the cavity" has been replaced with "a controller for activating the heating means simultaneous with or after the injection means injects the molten resin into the cavity" as suggested by the Examiner. The specification has also been amended to refer to the controller.

Sharp discloses a controller (microswitch 77, arm 78 and roller 79) which controls the flow of electricity to the heaters 76. As shown in Figures 1 and 2, microswitch 77, arm 78 and roller 79 are activated and deactivated somewhere between the closed position (Figure 1) and the open position (Figure 2) of the mold depending on the adjustment of these components. Thus, the heaters are not activated simultaneous with or after injection begins. In fact, they are activated before injection begins. On page 3, lines 97-102 it states that the cavity is closed (the heaters are now on) and that the material is then forced into the mold.

Thus, Applicants believe Claim 19 patentably distinguishes over the art of record. Likewise, Claims 20-25, which ultimately depend from Claim 19, are also believed to patentably distinguish over the art of record.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

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By: 

Michael J. Schmidt, 34,007

HARNESS, DICKEY & PIERCE, P.L.C.
P.O. Box 828
Bloomfield Hills, Michigan 48303
(248) 641-1600

MJS/pmg